

Name: Avni Dongre

Sec: A4-B3

Roll no:46

```
#include <stdio.h>
```

```
#define V 5
```

```
int isSafe(int v, int graph[V][V], int color[], int c) {  
    for (int i = 0; i < V; i++) {  
        if (graph[v][i] == 1 && color[i] == c)  
            return 0;  
    }  
    return 1;  
}
```

```
int colorGraph(int graph[V][V], int m, int color[], int v) {  
    if (v == V)  
        return 1;  
    for (int c = 1; c <= m; c++) {  
        if (isSafe(v, graph, color, c)) {  
            color[v] = c;  
            if (colorGraph(graph, m, color, v + 1))  
                return 1;  
            color[v] = 0;  
        }  
    }  
    return 0;  
}
```

```
}
```

```
int main() {
```

```
    int graph1[V][V] = {
```

```
        {0, 1, 1, 0, 1},
```

```
        {1, 0, 1, 1, 0},
```

```
        {1, 1, 0, 1, 0},
```

```
        {0, 1, 1, 0, 1},
```

```
        {1, 0, 0, 1, 0}
```

```
    };
```

```
    int graph2[V][V] = {
```

```
        {0, 1, 1, 1, 1},
```

```
        {1, 0, 1, 1, 1},
```

```
        {1, 1, 0, 1, 1},
```

```
        {1, 1, 1, 0, 1},
```

```
        {1, 1, 1, 1, 0}
```

```
    };
```

```
    int color[V] = {0};
```

```
    int m = 3;
```

```
    printf("Graph 1:\n");
```

```
    if (colorGraph(graph1, m, color, 0)) {
```

```
        for (int i = 0; i < V; i++)
```

```
            printf("Vertex %d -> Color %d\n", i + 1, color[i]);
```

```
    } else {
```

```

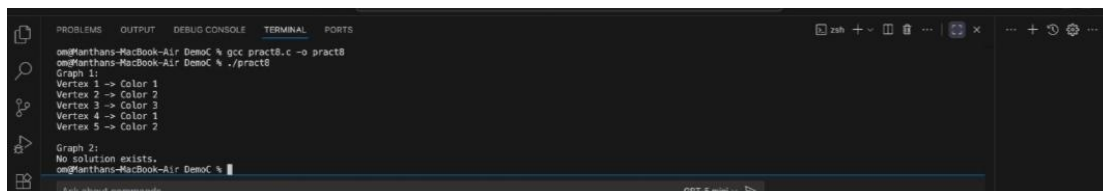
        printf("No solution exists.\n");
    }

    for (int i = 0; i < V; i++)
        color[i] = 0;

    printf("\nGraph 2:\n");
    if (colorGraph(graph2, m, color, 0)) {
        for (int i = 0; i < V; i++)
            printf("Vertex %d -> Color %d\n", i + 1, color[i]);
    } else {
        printf("No solution exists.\n");
    }

    return 0;
}

```



```

om@Manthans-MacBook-Air DemoC % gcc pract8.c -o pract8
om@Manthans-MacBook-Air DemoC % ./pract8
Graph 1:
Vertex 1 -> Color 1
Vertex 2 -> Color 2
Vertex 3 -> Color 3
Vertex 4 -> Color 1
Vertex 5 -> Color 2

Graph 2:
No solution exists.
om@Manthans-MacBook-Air DemoC %

```

GitHub: <https://github.com/ghangaremanthan908-wq/Manthan23A>